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CONSERVATORS OF THE HUNTERIAN MUSEUM

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CONSERVATORS OF THE HUNTERIAN MUSEUM

By

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Anatomy Curator, Royal College of Surgeons of England.

I. WILLIAM CLIFT
II. RICHARD OWEN
III. JOHN THOMAS QUEKETT
IV. WILLIAM HENRY FLOWER
V. CHARLES STEWART

Reprinted from

ANNALS OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND

I. WILLIAM CLIFT

On December 23rd 1799 the Company of Surgeons accepted the charge of John Hunter's collection recently purchased from his executors, Everard Home and Matthew Baillie, by means of funds voted by Parliament. On the same day the decision was taken to appoint a Conservator who was to be responsible for the safe keeping of the specimens as well as for the duty of displaying and explaining them, under the general supervision of the newly established Board of Trustees and Board of Curators. The man upon whom the choice fell was William Clift, then only twenty-four years old but nevertheless pre-eminently suited for the task he was now called upon to perform.

William Clift, the youngest of the seven children of Robert Clift, a miller, and his wife, Joanna, was born at Burford Mill, just outside Bodmin in Cornwall, on 14th February 1775. He was only nine when his father died, and the family, then in poor circumstances, moved to a small house in Castle Street, Bodmin. Mrs. Clift and the older children worked in the fields in summer and carded wool in winter to provide even the barest necessities; but William, a promising scholar, was kept at school in spite of the sacrifices that this entailed. He excelled in drawing and penmanship and he too was able to augment the family income by writing signs and notices for shopkeepers. After the death of his mother in 1786, however, his schooldays came to an end and work was found for him in a market garden. This did not last long for his master, Mr. King, was not amused when he found a caricature of himself executed by his youngest employee. Then followed several years of casual work until, as a result of the interest taken in his welfare by Colonel and Mrs. Gilbert, also resident in Bodmin, he was offered the opportunity of improving his prospects.

Mrs. Gilbert had been a schoolfellow of Anne Home who, in 1771, married John Hunter, and the two ladies had maintained their friendship. It was in the autumn of 1791, when Colonel and Mrs. Gilbert were on a visit to London, that John Hunter mentioned that since his amanuensis, William Bell, had left him to take the post of surgeon at Bencoolin in Sumatra, he had been unable to fill the post to his satisfaction. Mrs. Gilbert recommended young William Clift as being suitable and so the affair was settled. Documents of apprenticeship were prepared by Mr. Brown, the Bodmin lawyer, Colonel and Mrs. Gilbert supervising and providing much of the financial backing, and early in 1792 the boy set off by sea from Fowey on his great adventure. He arrived at Hunter's town house, 28 Leicester Square, on 14th February, his own seventeenth and his new master's sixty-fourth birthday. For the first few days Clift spent his time in making himself acquainted with the premises. The main

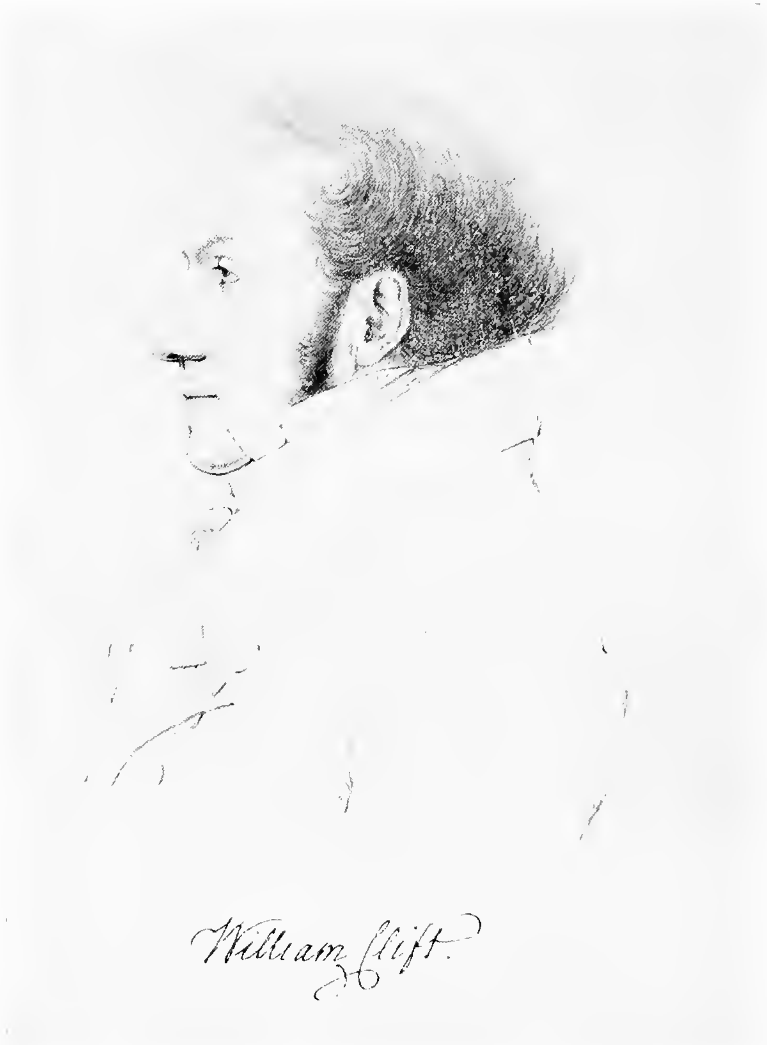
William Clift.

Fig. 1

house faced the square; in the open space behind it Hunter had built his museum and lecture rooms. A smaller house faced Charing Cross Road, then known as Castle Street, and it was here that Clift and the resident pupils had their apartments.

Soon he settled down to the routine he was to follow for the next eighteen months and maybe the arrangement was ideal in that Hunter was the more disposed to take pains with the training of a protégé of Mrs. Gilbert; and his apprentice was only too anxious to give satisfaction in order to please his patroness. The day began at six in the morning, when master and pupil worked together dissecting and preparing new specimens for the museum. Clift then wrote out the visiting and engagement lists and, during Hunter's absence, wrotes notes on the new preparations and finished the dissections. In the afternoon he had a drawing lesson and at about six in the evening he joined his master again for the evening's work of answering correspondence, sorting and arranging the new descriptions for the catalogue and recording cases. At the weekend the routine only varied in that the work was carried out at Earl's Court, Hunter's country house. It was a full, busy life and one that particularly appealed to the boy, for each day he acquired fresh knowledge and skill. Hunter soon expressed himself pleased with his progress and the rigid method of work instilled into him in these early days caused him to retain to the end of his life the same conscientiousness in performance and devotion to duty. The bond that grew between them was one never to be broken, and it was small wonder that Hunter's sudden death on 16th October 1793 was such a tragic event to his young pupil. He had lost his guide and protector and it was not to be expected that Everard Home, Hunter's brother-in-law, or Matthew Baillie, his nephew, would have the same personal interest in his career. Added to his grief at losing a kind and considerate master was the fear that his services might no longer be required for, at the age of eighteen, he was ill-equipped for any other occupation, half-trained as he was in the one that he had come to enjoy. He had early realized, however, that the museum was his master's greatest treasure and that, unlike other museums of that period, it was not merely a collection of rare and curious objects, but an ordered arrangement of specimens where, if the sequence was broken, the significance of the whole was lost. So for the next seven lonely years, when there was no one to advise or teach him or give praise for work well done, he never relaxed his care; and when in 1799 the museum was finally purchased, the preparations were found to be in as perfect a condition as when Hunter was alive.

On 22nd March 1800 the Company of Surgeons ceased to exist and the Royal College of Surgeons was created therefrom by Charter from the Crown. The premises in Lincoln's Inn Fields, purchased by the Company some years previously, were obviously neither suitable nor adequate for the offices of the College and the housing of John Hunter's thirteen thousand six hundred and eighty-two specimens. Largely by means of a generous grant from government funds a handsome new building was designed by the architects, George Dance and James Lewis, to satisfy these requirements. For the first six years of the century, the collection remained in Castle Street with its newly appointed Conservator. On 21st January 1801 he married Caroline Harriet Pope at St. Martin-in-the-Fields; and by the time that the apartments assigned to them in the new building were ready for occupation they had two children, William Home and Caroline Amelia.

The removal of the specimens brought many anxieties and problems, but Clift felt amply repaid for his years of devoted care when he saw the collection arranged in the fine museum in Lincoln's Inn Fields. It was indeed a pleasure to him to conduct the hundreds of distinguished visitors round the cases and galleries, but he was especially proud to perform this duty on 25th May 1811 when Mrs. Hunter herself and her daughter, Lady Campbell, visited the College.

Having arranged the museum in its new quarters, Clift devoted more of his time to the continuance of his studies. Hunter had pointed the way and the goal but it was Clift's perseverance that made him attain it. He taught himself French and German and began to build up a library of scientific and other works. He attended meetings, including those of the Anatomical Society, founded in 1796, that met in Freemason's Tavern, Great Queen Street; the Geological Society, founded in 1807; and, later, the Zoological Society. He devoted much time to the education of his children and with them learned to play the piano and other musical instruments. He acquainted himself with the progress of the arts and attended plays and operas. This was the heyday of the great painters, Romney, Constable, Lawrence and Turner; Clift had in his library Landseer's treatise on Engraving and da Vinci's works on Painting. It was not surprising that he often worked far into the night to accomplish all the tasks he set himself.

These were stirring times not only in Clift's life but in the Western world generally. Many of the wounded heroes of naval battles presented themselves at the College to have the severity of their disabilities assessed for purposes of pension. One of these was Lieutenant John Ross, who some ten years later, when increasing world trade made manifest the desirability of finding a " north-west passage ", was one of those who led an expedition for this purpose. Clift took advantage of this and sent on board the " Isabella " boxes containing spirit-filled bottles, with instructions for the preservation of any interesting specimens of natural history that might be found.

Certain events stand out particularly in this period. The year 1819 saw the death, at the age of seventy-three, of Clift's good friend and benefactress, Mrs. Gilbert. In the following year he went with his daughter to Paris, and, in addition to visiting museums and meeting fellow-scientists, he saw Talma, the great actor, friend and protégé of Napoleon, in the role of Hamlet. Napoleon died on 5th May 1821; and this year was made memorable for Clift by the death of Mrs. Hunter, who had never lost interest in her husband's last pupil. It was in 1823 that he received the highest reward for his long years of toil. In January he was greatly pleased by the appointment of his son as Assistant Conservator; and in May he himself had the honour of being elected a Fellow of the Royal Society. The poor little boy from Castle Street, Bodmin, had indeed travelled far. This recognition of his worth by his associates was no more than he deserved, but it was none the less gratifying.

But it was also in 1823 that he had to suffer what was probably one of the severest blows of his life. While travelling together to Kew, Sir Everard Home informed him that he had burned John Hunter's manuscripts. Pleasing and exciting as the events of the last twenty years had been, ever first and foremost in Clift's mind was his concern for the museum; and the destruction of these documents meant that some of its value was irrevocably lost. He now realized what good service he had done by copying out many of Hunter's notes for his own information during the years following Hunter's death until the papers were removed to Home's own house in 1800. After many difficulties and delays, arrangements were made to remedy the loss so far as this remained possible. In 1827 Richard Owen was appointed as a second Assistant Conservator and he and Clift's son set to work to assist in the preparation of the catalogues, an undertaking that Everard Home had engaged to perform but had never proceeded with. This formidable task was still in progress when William Home Clift died as the result of an accident in 1832, the year that also saw the death of Everard Home himself.

Only a few months after his appointment in 1827, Richard Owen became engaged to Caroline Amelia Clift. There is no evidence that Clift was other than friendly and appreciative of Owen as a colleague or as a prospective son-in-law. Mrs. Clift, however, refused for many years to consent to her daughter's marriage and it was not until 1835 that the event took place.

In 1834 Clift brought to the notice of the Board of Curators the fact that the accommodation was no longer adequate to house the collection, materially extended as it had been by his own efforts and by numerous donations and purchases; and the museum was therefore closed until 1837 for reconstruction. In 1840 further help in maintaining the collection was provided by the appointment of students who assisted in showing visitors round the museum and in preparing new specimens under Clift's supervision. One of the earliest of these was John Thomas Quekett, who was to succeed Richard Owen as Conservator.

During his conservatorship Clift had from time to time enriched and extended the scope of the museum by specimens of his own preparation, few of which, unfortunately, remain; many of his drawings, however, survive to give testimony of his proficiency and accuracy in this accomplishment.

He was called upon on numerous occasions by naturalists, anatomists and others to prepare illustrations for their work, notably by Sir Everard Home for his *Comparative Anatomy*, Dr. Patrick Russell for his *Account of Indian Serpents*, by William Long, Sir Astley Cooper and James Earle. Even before his appointment to the College, Matthew Baillie commissioned him to prepare the seventy-two illustrations for his *Morbid Anatomy*, twenty-four of which are to be found at the Royal College of Physicians and the remaining forty-eight in the Medical Library of the University of Melbourne. In the Library of the Royal College of Surgeons are two drawing books with Notes on Natural History, the work of William Clift. Most of the illustrations are in water colour and Figure 2 shows one of these, depicting one of the compartments of the stomach of a camel. Many of his drawings, like those of William Bell and Hunter's other artists, have provided the pattern by means of which lost or damaged specimens may be restored or replaced.

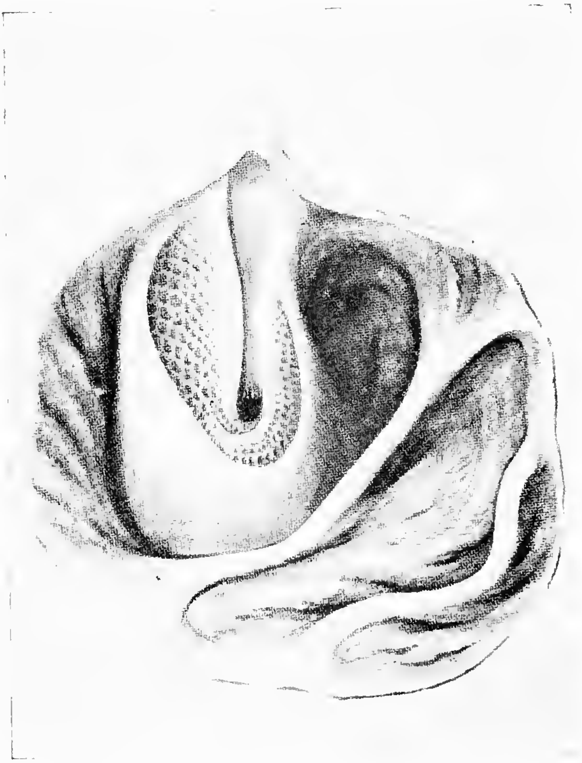

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Fig. 2. A portion of a camel's stomach. William Clift.

In 1842 Clift, now aged sixty-seven, considered that he was no longer able to carry out to his satisfaction the multifarious duties of conservator and it was decided that Richard Owen should now take over this post. Mr. and Mrs. Clift vacated the apartments in the College where they had lived so happily for the past forty years and they made their home at Stanhope Cottage, Mornington Crescent, Regent's Park. For the next seven years, apart from occasional visits to the College, his greatest pleasures were to tend his garden and enjoy the company of his grandson, William Owen. The death of his wife, his loving companion for half a century, seemed to cause a serious decline in his own health and he died only three months later, on 16th July 1849.

So ended the life of a most admirable man, one who was always ready and willing to help those anxious to learn and who was never daunted by difficulty or disappointment. He possessed those fine virtues, loyalty and courage: loyalty to John Hunter's memory; and the courage that made him fight for his master's most cherished possession. He has been succeeded by many more distinguished than he in scientific attainments, more fortunate in those opportunities afforded by family and environment for education and advancement; but it was he who made certain that the collection still reveals to-day the genius that was John Hunter. He set the example that they followed. It was William Clift, not the executors, who during the seven years following Hunter's death, when a few weeks' neglect would have ruined the whole museum, never once relaxed his care. It was he who for the next forty-two years urged its preservation as the founder had designed it and was constantly on his guard against those who had other ideas about its ordering. It is in no small way due to his single-minded devotion that John Hunter's unwritten book, his museum, has been preserved. Some of the pages may be difficult to read, for the collection was sadly depleted in 1941 by enemy action, but the story is there, as it has been for the last two hundred years, for those to read who come to marvel at, to learn and gain inspiration from John Hunter's unparalleled achievements.

II. RICHARD OWEN

In the year 1753 Elizabeth, daughter of Richard Eskrigge, High Sheriff of Buckinghamshire, married William Owen, a Freeman of the Fishmongers' Company. Only a year later, shortly after the birth of her son, Richard, Elizabeth Owen died and the baby was brought up by his grandparents, in due course inheriting the Eskrigge property, Fulmar Place. At Preston, on 8th November 1792, this Richard Owen, now a prosperous West India merchant, married Catherine Parrin, a member of a Huguenot family which had left Provence after the Revocation of the Edict of Nantes. They had six children, of whom Richard, the younger of the two boys, was born on 20th July 1804. After leaving Lancaster Grammar School at the age of sixteen he was apprenticed to Leonard Dickson, surgeon and apothecary of that town. Dickson died two years later in 1822 and, after a short period with Joseph Seed, Owen continued his training with James Stockdale Harrison, who often delegated to his pupils the duty of tending the sick prisoners in the jail as well as making post-mortem examination of those who died. In 1824, Owen matriculated at the University of Edinburgh and without proceeding further in his apprenticeship began the study of medicine there. After a year, however, he was advised by John Barclay, whose course of extra-mural lectures on Anatomy and Surgery

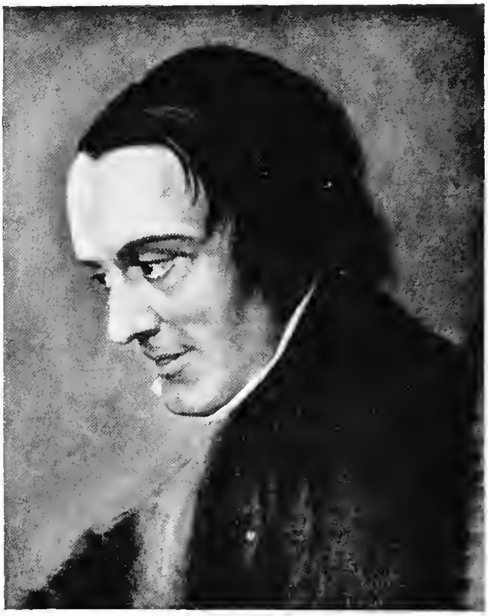

Fig. 3. Richard Owen.

Owen had attended, to go to London in order to study with John Abernethy at St. Bartholomew's Hospital. This he did and, on 18th August 1826, gained his Membership of the Royal College of Surgeons and began practice at 11 Cook's Court, Carey Street, Lincoln's Inn Fields, where many of his patients were lawyers.

In 1826, John Abernethy was elected President of the Royal College of Surgeons. He had always shown an especial interest in John Hunter's collection and was at this time particularly concerned with the preparation of descriptive catalogues for it. For more than a quarter of a century William Clift had fulfilled his manifold duties most meticulously, but the growing prestige of the College and the consequent increase in the number of visitors and other commitments left him little time for such exacting work. On Abernethy's suggestion, therefore, Richard Owen was invited to assist in completing the catalogues of the Physiological Series, this arrangement being the more convenient since Owen's residence was so near the College. The appointment dated from 7th March 1827 and the salary was £30 a quarter. A few months after this date, Owen was called to the Conservator's private apartments to find Caroline Clift lying stunned as a result of a fall from a step-ladder. There seems to have been a mutual attraction, gifts passed between them and before the end of the year they were engaged to be married. This provided a spur to Owen's ambitions in more ways than one, for Mrs. Clift insisted that before any wedding took place her future son-in-law should have a more secure and ample income than he could then command. To supplement his meagre salary of £120 a year he now applied for and was successful in gaining a lectureship on Comparative Anatomy at St. Bartholomew's Hospital. In 1830, being mindful of his mother's advice " to become a pupil of some person already eminent and in high repute ", he had the opportunity of taking a post as house surgeon to the Birmingham Hospital, where Joseph Hodgson, a future Member of Council and President of the College, was chief surgeon. Finding, however, that it would take at least 10 years to build up even a moderately lucrative practice, Owen felt that the prospects did not justify changing his occupation and he wrote to his fiancée to acquaint her with his intention of resigning the offer, the letter ending: " But the die is cast; you shall be with me ever and guide and prompt, and see my exertions."

It was at this time that the Zoological Society of London was established, of which Owen became a Life-member and member of Council. He was instrumental in inaugurating scientific meetings, the proceedings of which were published by the Society, and his first zoological paper appeared here (*On the Anatomy of the Ourang-outang*, Vol. 1, 1831). Figure 4 is one of the illustrations for his paper " On the Structure of the Heart in the Perennibranchiate Batrachia ", which was published in the first volume of the Transactions of the Society in 1835. He did not neglect his medical and surgical work, however, and when not engaged in his duties at the College he continued his practice in Cook's Court, so that within the space of a few years not only his prestige but his income also was almost to the dimensions required for his marriage. In September 1832 occurred an incident that determined the whole pattern of his career from this time: William Home Clift, who in all probability would have succeeded his father as Conservator, died as the result of being thrown from a vehicle turning too sharply into Chancery Lane from the Strand. His post was not filled and in the following July Owen's salary was raised to £300 per annum. In spite of the greatly increased responsibility he now assumed, he was able in this year to complete and publish his *Memoir on the Pearly Nautilus*, a masterly piece of investigation which placed him in the first rank of comparative anatomists, and also the first of the five volumes of the Physiological Catalogue of the Hunterian Museum. This contains detailed descriptions of 841 specimens, based upon notes made by John Hunter with additions by William Clift, all of which were carefully verified

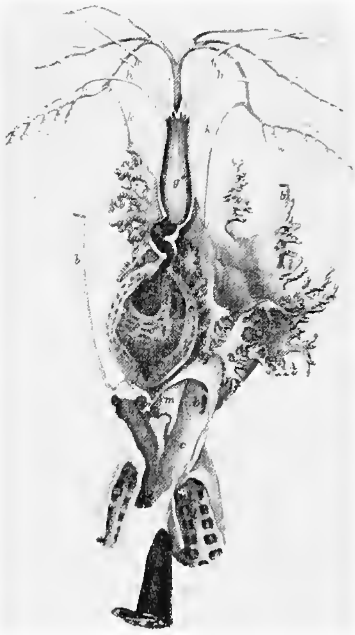

Fig. 4. The heart of *Siren lacertina* showing the structure of the ventricle and bulbus arteriosus. From a drawing by Richard Owen. The original specimen (K 111.4) was destroyed in 1941.

by Owen himself, and illustrated with items from the Hunterian collection of drawings or his own. Though this work required the utmost concentration and patience, his energy seemed inexhaustible, for in addition he founded and indeed wrote the greater part of *The Zoological Magazine*. Early in 1834 he was appointed to the newly established Chair of Comparative Anatomy at St. Bartholomew's Hospital and on 18th December was elected a Fellow of the Royal Society. His certificate mentions him as being " a gentleman intimately acquainted with Physiology, Comparative Anatomy and the various branches of Natural History, author of a paper on the ' Ornithorhynchus paradoxus ' printed in the Philosophical Transactions and of another on the Generation of Marsupial Animals recently read before the Society "; and the many eminent names among the twenty-five signatures to the document give some indication of the esteem with which he was regarded though he was but thirty years old.

For some years both Clift and Owen had complained to the Board of Curators of the Hunterian Museum that the preparations could no longer be adequately displayed owing to the great number of additions that had been made as a result of their investigations without, however, a corresponding increase in the accommodation available. It was finally agreed that an ambitious programme of rebuilding should be undertaken which involved the complete reconstruction of the museum premises. The old room was replaced by two more spacious ones, each with commodious galleries and store rooms. Incorporated into the new building were apartments for Owen himself, into which he was able to move in May 1835; of them Caroline Clift wrote: " I was agreeably surprised at the size of the rooms and the comfort of the kitchens, but the upstairs is most inconvenient." It was here that Mr. and Mrs. Owen took up residence a few months later after the long-awaited wedding on 20th July, the bridegroom's birthday, at St. Pancras Church at 8.30 a.m. Their only child, named William after his grandfather, was born on 6th October 1837.

One of the conditions upon which the Hunterian Collection had been handed to the Company of Surgeons was that " one course of lectures, not less than 24 in number, on Comparative Anatomy and other subjects, illustrated by the preparations, shall be given every year by some member of the Company ". Everard Home delivered the lectures in 1810 and 1813 and again in 1822; other lecturers were Astley Paston Cooper, Benjamin Collins Brodie, Joseph Henry Green, William Lawrence and Charles Bell, all gentlemen of the highest repute. The invitation issued in April 1836 to Richard Owen to join this company gave him the utmost gratification as he expresses in the following extract from the letter acknowledging the notification of the appointment: " I cannot, nor shall I ever be willing to forget how much I owe my present presumed eligibility to illustrate by public lecture the labours of Hunter, to the favourable position in which I am placed in being entrusted by the Council of the College with the partial charge of a collection, originally most extensive, in preparations of Comparative Anatomy, and since become unrivalled through the care of a wise and liberal administration." Owen was re-elected Hunterian Professor yearly until 1855 and throughout the eighteen years delivered a magnificent series of lectures on the history of the museum and its contents together with expositions of his own investigations.

The first lecture was an ordeal for the new professor. Manuscript notes have survived and the opening sentence, upon which he had obviously expended much thought, was: " Mr. President, Sir, In commencing this course of lectures allotted to me as Hunterian Professor to this College, my mind is deeply and painfully impressed with a sense of the disproportion of its faculties to the adequate discharge of the important duties of that office, while at the same time, the honour of your choice, and my peculiar obligations to this College compel me to exert my utmost to satisfy your desires and expectations." Mrs. Owen's diaries give more domestic details: " R. robed in the drawing-room and took some egg and wine before going into the theatre. . . . At 5 o'clock a great noise of clapping made me jump for I timed the lecture to last a quarter of an hour longer, But R., it seems, cut it short rather than tire Sir Astley Cooper too much. The theatre crammed and there were many who could not get places. R. was more collected than he or I ever supposed and gave this awful first lecture almost to his own satisfaction! We sat down a large party to dinner. Mr. Langshaw and R. afterwards played two of Corelli's sonatas."

Owen did not escape adverse notice in the *Lancet*, however. His introductory lecture for 1841 called forth the comment in its pages that " It will scarcely be credited that Mr. Owen occupied the whole hour in a demonstration of the bones of the human skeleton, of so purely an elementary a nature, that the veriest tyro of the profession who had attended but one course of lectures would have learned nothing from the lecture. . . . A better explanation of this extraordinary lecture is that it was delivered on April fool's day." The editorial comment is interesting, for after pointing out that the lectures were attended by noblemen, bishops and such non-professional gentlemen, it concludes: " The demonstration of the bones of the skeleton, although probably somewhat distasteful to a junior member, would be greeted with satisfaction by every senior practitioner as a means of refreshing their knowledge upon an important part of our system."

It was from now on that, in recognition of his outstanding learning, intellect and skill, honours were bestowed upon him by learned societies not only in this country but in all parts of the world. During the time that he served at the Royal College of Surgeons alone these included the Royal and Copley Medals of the Royal Society; honorary degrees of LL.D. Edinburgh and D.C.L. Oxford; Member of the Imperial Academy of Sciences of Moscow and Chevalier of the Prussian Ordre Royal pour le

Mérite. He was, however, obliged to forgo the honour of accepting the Fullerian Professorship at the Royal Institution, on instruction from the Council of the College, for it was considered that his duties in the museum, if conscientiously performed, would leave him insufficient time for such outside interests and activities. But his vision was extending far beyond the precincts of the College, where the restrictions imposed upon him were becoming irksome. Some of his bitterness is revealed in a letter to his wife even as early as 1837: " What's the use of trying to collect one's ideas for a report to the Trustees? One thousand and three moths killed by tobacco-smoke and directions of the Board of Curators. All old corners and out-of-the-way archives diligently and carefully looked through and the letters out of date, old catalogues and other documents left where they were found. I cannot get on; it's no use."

In 1839 he made an exciting discovery. Among the thousands of visitors to the museum who sought his advice and help in matters of Natural History, one brought to him a fragment of bone to be identified. The story is well known. The bone was part of the shaft of the femur of the Moa. No wonder that Owen's first communication on the structure of this bird was received with considerable reserve, even scepticism, by his zoological colleagues, for from a piece of bone six inches long Owen had presented to them his estimation of the anatomy of the whole creature. When, four years later, an entire skeleton could be assembled, confirming in almost every detail his inspired reconstruction, even his bitterest critics no longer dared to question his ability.

In 1840, arising out of regular but informal meetings of friends for the discussion of problems relating to the finer structure of animal tissues, the Microscopical Society was founded and Owen was elected the first President. Another member of this group was a young man newly qualified in medicine, John Thomas Quekett, who in that year also joined the museum staff as Anatomy Student. Two years later William Clift retired from his post as Conservator, Owen was appointed to succeed him and Quekett took the office of Assistant Conservator. Comment upon Owen as a colleague appears in the writings of another distinguished scientist of the time, Thomas Henry Huxley: " It is astonishing with what an intense feeling of hatred Owen is regarded by the majority of his contemporaries. With Mantell as arch-hater. The truth is, he is the superior of most, and does not conceal that he knows it, and it must be confessed that he does some very ill-natured tricks now and then. A striking specimen of one is to be found in his article on Lyell in the last Quarterly where he pillories poor Quekett—a most inoffensive man and his own immediate subordinate—in a manner not more remarkable for its severity than for its bad taste. That review has done him much harm in the estimation of thinking men." But elsewhere he says: " Owen has been amazingly civil to me. He is a queer fish, more odd in appearance than ever and more bland in manner. He is so frightfully polite that I never feel thoroughly at home with him." Nevertheless, Owen did make close and lasting friendship with eminent men and women representing a wide variety of professions and occupations, as well as with members of the Royal Family by whom he was held in particularly high regard. His letters, too, often show charm and humour. One written in 1844 to Michael Faraday, who had offered to send him a three-legged frog, contains the following passage: " When Clift was a young boy (he still is one though somewhat older) he one day had a holiday to catch bees and other live things for John Hunter: he found a frog with five legs; Hunter was delighted, gave him half a crown and made a preparation of the quinqueped monster. As everything is balanced in time I suppose your example is the unhappy individual fated to pay for his ancestor's profusion and it seems they were also destined to come together and preach a perpetual lesson of moderation. If one frog has five legs another must have three: the proper quantity only being allowed." (See: *Richard Owen and William Clift* by Sir Harold Hartley, F.R.S. *Notes and Records of the Royal Society*, Vol. 10, No. 1, p. 60.)

Owen's advice was sought and valued on many subjects other than medicine or comparative anatomy. He was invited to be a member of the committee set up in 1846 to consider in the first instance the state of the various collections at the British Museum and later the possibility of combining and rearranging the contents of the national museums, including the Hunterian, in order to avoid duplication. His restoration of the megatherium, iguanodon, ichthyosaurus and other monsters of bygone times prepared for the Great Exhibition of 1851 provided, it is true, a wealth of material for caricature; but it also made his name a household word. At the end of the year, Owen was informed that the Queen was graciously pleased to offer him a residence upon Kew Green, become vacant by the death of the King of Hanover, this being " a tribute of her respect and regard for science by meeting what she believes to be the almost necessary convenience of one of its chief ornaments and most distinguished members " Owen accepted the offer, though the house he finally occupied was Sheen Lodge in Richmond Park and not the one originally intended. This brought him into difficulties with the Board of Curators and with the Council for on his appointment he had asked to be allowed apartments within the College in order to perform his duties more efficiently; now he stated that he wished to reside away from London for much the same reason. The supervision of the varied pursuits connected with the Hunterian Museum had always been regarded as a full-time occupation and Owen's only too obvious desire to indulge in so many activities unrelated to his duties at the College was taken as wilful neglect of the rules and conditions of his appointment. The position was a difficult one and it was obvious that the time had come for Owen to expend his energies and further his ambitions elsewhere.

Meanwhile, the plans for reorganization of the British Museum had proceeded under the guidance of Lord Macaulay, who was able to procure early in 1856 the appointment of Anthony Panizzi as Secretary and Principal Librarian. He now proposed that Owen should be offered the post of Superintendent of the whole department of Natural History. Huxley comments thus on the situation: " The heartburnings and jealousies about this matter are beyond all conception. Owen is both feared and hated, and it is predicted that if Gray and he come to be officers of the same institution, in a year or two the total result will be a caudal vertebra of each remaining after the manner of Kilkenny cats." The invitation to Owen arrived on 26th May and the salary proposed was £800, £300 more than he received from the College. On 12th June he handed in his resignation of the office of Conservator of the Hunterian Museum, which was accepted by the Board of Curators. Henceforward his career continued to be one of undiminished distinction and achievement. At the request of the Prince Consort he lectured to the Royal children at Buckingham Palace; he continued in charge of the department of Natural History in the British Museum until 1884 and was thus able to superintend the removal of the valuable collections from the cellars and store rooms of Bloomsbury to the splendid new premises in South Kensington, a monument alike to his renown and to the wisdom of Prince Albert. On his retirement in 1884 he was gazetted K.C.B.

Caroline Owen died on 7th May 1873; and the only child, William, in 1886. Richard Owen continued to live in Sheen Lodge with his daughter-in-law and five grandchildren until his death on 18th December 1892. During the last few months when his health was failing he was visited on several occasions by the Prince of Wales and the Duke and Duchess of Teck accompanied by their daughter, the late Queen Mary.

Richard Owen's achievements, whether reckoned in terms of worldly success or in the more enduring form of scientific distinction, were remarkable. During the time that he was Conservator of the Hunterian Museum more than 300 publications stand to his credit. His researches into the minute structure and development of the teeth—*Odontography*—were published from 1840 to 1845; his memoirs on the Mylodon, Toxodon, Megatherium and Glyptodon between 1841 and 1855; but the five volumes comprising the catalogue of the Physiological Series are in many ways his finest achievement. Here he made a permanent record of the design, scope and arrangement that John Hunter had planned for this section of his museum, wherein may now be found the pattern for replacement and restoration. In the words of Thomas Henry Huxley, " During more than half a century, Owen's industry remained unabated; and whether we consider the quantity, or the quality, of the work done, or the wide range of his labours, I doubt if, in the long annals of anatomy, more is to be placed to the credit of any single worker."

III. JOHN THOMAS QUEKETT

On 12th June 1856, Richard Owen handed to the Council of the College a letter of resignation from the post of Conservator of the Hunterian Museum, the contents of which were:

> " Gentlemen, The Government having constituted the office of Superintendent of the Natural History Departments of the British Museum and the Trustees having honoured me with the offer of this appointment, I have come to the determination to accept it and beg most respectfully to place in your hands my resignation of the office of Senior Conservator of the Museum of the College. I quit the duties which have formed the main labors and pleasure of the last twenty-nine years of my life with unfeigned regret. I shall ever retain a lively feeling of gratitude to the College and especially towards the memory of those members of its Council by whom I was honoured with office and enabled thereby to lay the foundation of my present standing in science. With these sentiments I relinquish the service of the College with the warmest wishes for its continued prosperity and the desire to embrace every available opportunity to promote its interest and usefulness.
>
> Your obliged and faithful Servant, Richard Owen."

It was resolved that the resignation of Mr. Owen be accepted, with " the expression of the great regret of the Council at the loss of the services of a gentleman who has been so long connected with the Museum and who has earned so wide a reputation as a scientific naturalist, and of their gratification that the cause of his resignation is his appointment to an important office connected with the same department of Science in the British Museum " At the same time the Museum Committee was requested to take the steps made necessary by the Conservator's resignation. The committee met on 17th June, the letter was read and, since the matter was urgent, " it was recommended that the sole custody of the Museum be confided to the Resident Conservator, Mr. Quekett ". This was reported to the Council on Thursday, 10th July, when the appointment was confirmed. The committee had suggested a salary of £400 but the Council raised this to £500; apartments for the new Conservator and his family were provided within the College, together with a supply of coals and light. At the same time, the standing rules relating to the office were revised, in particular the one relating to residence that had been relaxed when Richard Owen had been granted permission to accept the grace and favour residence of Sheen Lodge. The hours of duty were reaffirmed as from 10 a.m. to 4 p.m., with the added proviso that, should the circumstances require it, longer hours would be regarded as a normal duty.

John Thomas Quekett, fourth son of the headmaster of Langport Grammar School, Somerset, was born in 1815. His early education was gained at this school and it seems that even then he showed his aptitude for those pursuits which were to be his chief interest in later life. At the age of 16 he gave a course of lectures on microscopical science illustrated by diagrams and a microscope of his own design, said to have been fashioned from " a common roasting jack, a lady's old-fashioned parasol and pieces of brass purchased at a neighbouring marine store dealer's shop " In due course he entered as a student at the London Hospital and served his apprenticeship to his brother Edwin, who was Lecturer in Botany there. On 10th April 1840 he was awarded his Diploma of Membership of the Royal College of Surgeons and he applied for and was successful in gaining a studentship in Human and Comparative Anatomy there. These studentships, of three years' duration, had been started in 1839, the first to hold the post being William Crozier. The third to be appointed was William Augustus Hillman in 1841, making the full complement, an arrangement which continued until 1855.

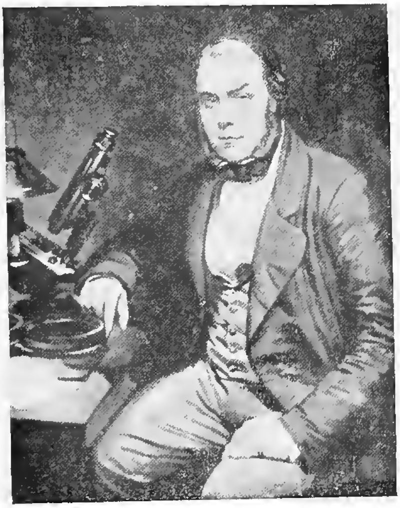

Fig. 5. John Thomas Quekett.

Possibly on the suggestion of William Clift, whose daily records of events and personalities as well as of work accomplished provide a fascinating picture of museum activities over a period of 30 years, Quekett too kept a diary for the first few years of his service on the staff of the College. Seven volumes of it are preserved among the manuscripts in the Library and the first gives the information that " Mr. J. Quekett commenced his duties at the Royal College of Surgeons on the 17th of August 1840 since which time he has been engaged as follows." The entries then consist of details of each day's manner of occupation, often illustrated with diagrams. On the fly-leaf of this first volume is written in his hand " Haec olim meminisse juvabit "

The work upon which Quekett was now engaged was manifold in character, demanding on the one hand manual dexterity and on the other an intimate acquaintance of the basic principles at least of all the natural sciences. Some of it was such as would nowadays be undertaken by senior technicians, the repair and maintenance of specimens already in the museum and the mounting of new ones. At the end of September 1840 he was busily engaged in stuffing a foetal elephant recently presented by David Morton, Esq. The diary entries read as follows:

" Wednesday 23rd	Commenced taking off the skin of the foetal elephant; the skin from one side was in a very decomposed state and unfairly cut; when the head was laid open the bones composing the cranium were found to be quite loose and dropped out from the skin; the tympanum was well developed and so were the ossicula auditus, the rudimentary tusks were also, and ½ an inch in length; the membrana tympani was attached to a ring of bone which came away as a separate piece; the membrane was nearly ¾ inch in diameter and had the malleus attached to its centre. The specimen was about the middle period of gestation which is twenty-two months.
Thursday 24th	Finished skinning of the foetal elephant. All the bones were in the state of epiphysis especially the long bones and those of the phalanges. Placed the carcass in a jar of spirit.
Friday 25th	Engaged in stuffing the skin with horse hair and sewing it up but from the decomposed condition it was in the stitches were obliged to be made very coarsely and the material used was white cotton which much disfigured the specimen. Its length is 20 inches or rather more from the mouth to the buttocks, especially when the neck was stretched out.
Saturday 26th	Placed the foetal elephant in a jar of spirit and suspended it, having forgotten to place a bristle in a small foramen near the ear as desired by Mr. Owen. This now forms preparation 3558 B in the Physiological Gallery."

This specimen, with this same number, can still be seen in the Hunterian collection. As time went on he and his fellow students were put to work upon a wide variety of investigations, these including a study of the diseases of bone and of the process of healing, particularly by experiment on the web of a frog's foot; the structure of the umbilical cord of the giraffe, of whalebone and of the kidney. It was Quekett who devised and perfected a technique for multicolour injections, some of the results being mounted as corroded specimens. For each preparation a report was made upon the microscopical appearance, together with a series of slides to elucidate it.

On 23rd December 1840 he made the following entry in his diary: " O festus dies hominis!!! Worked at Botany in the morning, went up to the Hall at ½ past 3 and came out with Diploma in hand about half past eight, then went to the Microscopical Society." The diploma that he gained was that of Licentiate of the Society of Apothecaries.

The variety of his duties and the diverse interests and occupations involved made exacting demands. Often when engaged upon a particular piece of dissection or research, he would be called away by Richard Owen to be set to work, often for whole days, " in writing for the catalogue ". The particular section upon which they were engaged was that relating to the Products of Generation, described in the fifth and last volume of the catalogue of the Physiological Series which was published in this very year.

There were, nevertheless, times of relaxation as, for instance, his conversations with William Clift, with whom he seems to have been somewhat of a favourite. One of these was " about Mr. Hunter and Dr. Monro and Mr. Parkinson, a copy of whose Hunterian Reminiscences he presented me with ". Another break was the day when " Mr. Crozier and myself started a few minutes after ten o'clock on a water-beetle-catching excursion to the Isle of Dogs ". On another day, soon after arriving at the College, he " received orders from Mr. Owen to be in readiness at 6 o'clock to go to Hungerford Market to take the viscera out of a large Whale. I dined with him and got all things ready but found that it was not to be commenced until one in the morning; a most troublesome job; up to our knees in oil!" He also had the pleasure of assisting Charles Darwin in sorting and labelling his South American fossils.

At the end of his three-year term of office as Student of Anatomy he was appointed Assistant Conservator. William Clift had officially retired from the post of Conservator in the previous year, but still continued to perform many of the less arduous duties of that office. In 1844 Quekett was appointed by the Council of the College to " deliver annually a course of demonstrations with a view to the exhibition and connected description of the collection and to the explanation of the method and resources of microscopical study ". One of these, on 2nd April 1845, was attended by William Lawrence and Robert Keate; Quekett wrote in his diary that " Mr. Lawrence seemed to understand the object of the preparations and seemed more pleased with them than any member of the Council who had previously paid me a visit ". The subject-matter of his lectures was mainly microscopical, but in addition to his own he discussed the work of others in the same field, notably that of Lieberkuhn and Hewson.

The only interruptions were those unavoidable: weather conditions occasionally made his work impossible, especially in the winter, when bad light prevented the execution of precise dissection; but more frequently the cause was his own poor health. As a result of a carbuncle on his forehead which Sir Benjamin Brodie " divided by a crucial incision on 26th November 1845 " he was away from the College for over a month. Nevertheless he was able during the first five years of his service to prepare a series of microscope slides closely related to and illustrative of the finer structure of many of the preparations in the Physiological Series of the Hunterian collection. These, numbering nearly three thousand, were purchased by the College in 1846. During these years he had been resident within the precincts of the College; on 17th September 1846, however, he was married at St. Mary's Church, Marylebone, to Miss Isabella Mary Anne Scott, second daughter of David Scott. The service was conducted by the Rev. William Quekett, brother of the bridegroom, who earlier this year had petitioned Sir Robert Peel to be granted a living, stating that he was the oldest curate in the country! (Eight years later he was appointed

Rector of Warrington, where he died on Good Friday, 1888.) After the wedding, Dr. and Mrs. Quekett took up residence at 15 Dorchester Place, Blandford Square, and here two of their sons were born: Arthur Edwin on 8th October 1850 and Alfred South in 1852.

In 1848 Quekett published *A Practical Treatise on the Use of the Microscope*, the first of a series of outstanding works of reference which reflect complete mastery of his particular subject and of the instruments designed for its study. In 1850 there appeared the first volume of the *Descriptive and Illustrated Catalogue of the Histological Series contained in the Museum of the Royal College of Surgeons of England.* This, dealing with the subject of the elementary tissues of plants and animals, includes descriptions of more than 1,200 preparations, illustrated by his own delicate and detailed drawings. A second volume of this catalogue was issued in 1855 and was devoted to the structure of the skeleton of vertebrate animals. In 1852 his *Lectures on Histology for the Session* 1850/51 were printed; and two years later a further volume covered his lectures for the following session on the subject of the structure of the skeleton of Plants and Invertebrate Animals. In addition, he contributed numerous papers to the Microscopical Society, of which he had been a founder member.

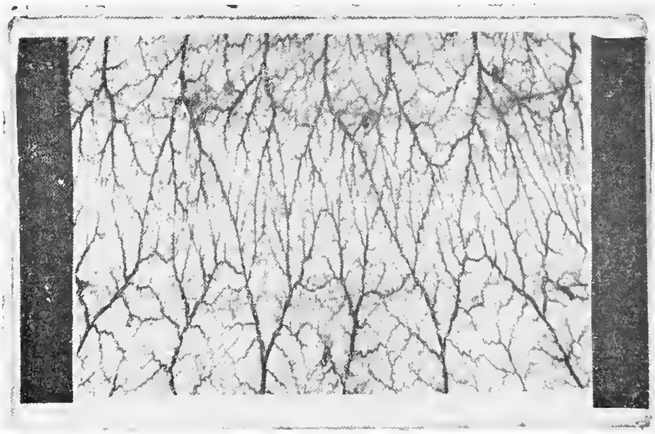

Fig. 6. Injected microscopical specimen prepared by Professor Quekett to show the blood supply of the human intestine.

In 1852 a change was required in his domestic arrangements, for in that year Richard Owen was granted permission to live away from the College, at Sheen Lodge, Richmond Park, the residence offered to him by the Queen in appreciation of his contribution towards the success of the 1851 Exhibition. Quekett was therefore requested to take over for himself and family the apartments within the College formerly occupied by Richard and Caroline Owen and their son William; and he was now termed the Resident Conservator. The high regard in which he had come to be held by the Board of Curators and the Council of the College can perhaps best be estimated, then, by the fact that on the resignation of Richard Owen in June 1856, the post was not advertised but offered at once to John Thomas Quekett, then 41 years old, who had already been in the service of the College for 16 years and had had the benefit of the advice and guidance of William Clift for nine years and of Richard Owen for the whole period. His knowledge of the museum, of its maintenance and organization, as well as of his own speciality was fully realized and esteemed; furthermore, his character and personality were such that as a colleague he was respected and admired.

The immediate result of the appointment was that he was more completely involved in administrative duties so that although much of the preparation for the third volume of the Histological Catalogue had been initiated it was, in fact, never completed; and it was never possible to begin even the preliminary work on the succeeding ones, so that the catalogues for the major part of the histological collection, numbering at that time some 15,000 slides, still remain in manuscript form. Soon after he assumed office he was invited to give a course of Hunterian Lectures and, in view of his special interest, a separate series on Histology was included, this being in addition to the normal one on Comparative Anatomy which at that time also was extended to include Physiology as well. Each year from 1857 to 1861 he prepared and delivered twelve lectures in which he traced the development and structure of the skeleton of Plants and Animals as demonstrated by microscopical preparations. In 1860 his outstanding achievements were recognized by his fellow scientists by his election to Fellowship of the Royal Society. In this year he relinquished the post of Honorary Secretary to the Microscopical Society, which he had held for 18 years. He was unanimously elected President and delivered his Presidential Address on 13th February 1861. This was the only meeting he was able to attend during that session, for he was now obviously fighting with great courage what he probably knew to be a losing battle against ill health. On 13th June 1861 it was reported to the Council by Dr. Goodfellow, his medical attendant, that he was suffering from a serious indisposition and that it would be two months before he could return to his duties. But it was only a few days after the elapse of this period that his death, as a result of Bright's disease, occurred on 20th August at Pangbourne, where he had been staying in the hope of regaining his strength. The news was reported to the Council on 10th October and the members expressed their deep regret and their sincere condolences with Mrs. Quekett, together with " their sense of the untiring zeal and ability which he constantly displayed in performing the arduous duties of his high office ".

Several schemes were set on foot to assist Mrs. Quekett and the four boys, for it was generally known that her husband had never been able to take out a life insurance policy. From the funds of the College £200 a year was paid to Mrs. Quekett, three-quarters of which was to be spent on the education of the children so long as they should require it. Subscription lists were opened by the Microscopical Society and also by the Manchester Literary and Philosophical Society. One of the notable tributes to him was the founding in 1865 of the Quekett Club, a society of amateur microscopists which met on the first Friday in each month at 8 o'clock. Before this, however, a sympathetic appreciation of John Thomas Quekett, his character and his achievements, was given by George Gulliver, F.R.S., in his Hunterian Oration delivered on 14th February 1863. " In truth ", he says, " it was Mr. Quekett's happiness to have his mind so full of the importance of those pursuits which he loved so well and truly, as to leave no room in it for the nurture of lower feelings. His gentle nature could not entertain what our great epic poet calls ' the troubled sea of noises and hoarse disputes ' but preferred in a calm and pleasant retirement to enjoy the still air of his delightful studies."

The loss to the College was a severe one and it was none-the-less so to scores of others who had depended upon his advice. Among these were members of his own profession who constantly applied for his opinion on doubtful questions of physiology and pathology. His knowledge of all subjects in the investigation of which the microscope is used was extensive, varied and accurate; though cautious and sometimes slow in giving an opinion his apparent hesitation was occasioned rather by the abundance than deficiency of information. " He was endowed with a rare combination of qualities, the exercise of which made him the accomplished microscopist he confessedly was." These words were spoken by the President of the Microscopical Society in 1862. He went on to say: " His simple aim was truth; his labours were mainly directed to determining facts, leaving to others to draw the inferences they might justly warrant. Hence the special character of his works; abounding as they do in original observations, they are a rich treasure of well ascertained facts, duly authenticated by a competent observer, and faithfully recorded by a trustworthy witness."

IV. WILLIAM HENRY FLOWER

In October 1861, at a meeting of the Council of the Royal College of Surgeons, the appointment of a new Conservator for the Hunterian Museum was considered, the post being vacant as a result of the death of Professor Quekett. At the same time it was agreed that the rules and conditions of that office should be reviewed. It was resolved that the salary offered should be £500 a year, together with " apartments, coals and light "; that the hours of duty should be from 10 a.m. to 5 p.m. (instead of 4 p.m. as previously); and it was decided that the house next to the college on the east side should be the residence of the conservator, who was to be asked to insure his life for £1,000. Special rules relating to the direction of the museum were laid down as follows:

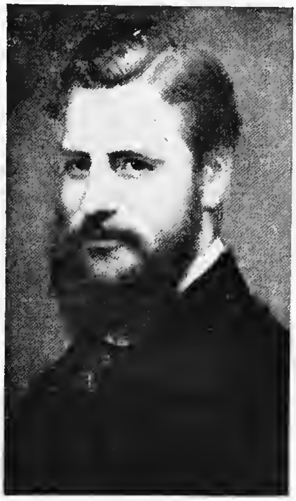

Fig. 7. William Henry Flower.

- (*a*) a record must be kept of all specimens acquired and of their disposal;
- (*b*) before being placed in the museum all specimens were to be approved by the Museum Committee and a description entered in the catalogue;
- (*c*) all catalogues were to be kept up to date;
- (*d*) all correspondence relating to the museum was to be reported.

At the same meeting it was decided that applications for the post should be submitted not later than 30th November. Ten were received, but four of the candidates, on hearing the rules and conditions pertaining to the post, begged leave to withdraw, and one, Thomas Howard Stewart, who had been on the museum staff as student and assistant since 1852 and was eminently suited for the position, was obliged to renounce his claim because of ill-health. The five remaining were William Henry Flower; James Thomas Arlidge; William Kitchen Parker; Thomas Rymer Jones and Joseph Maclise; and on consideration of their merits and suitability they were placed in that order. All had submitted preparations and drawings as well as a statement of their professional attainments. The final decision was made on 19th December, when Mr. Flower was invited and consented to become the new Conservator. He attended a meeting of the Council on 24th December and took the oath of office. On 30th December, at the meeting of the Museum Committee, he was presented with copies of the catalogues (15 large volumes!) so that he should be fully acquainted with the contents of the museum before commencing his duties. Until now all the conservators had enjoyed the advantage of a long apprenticeship with their predecessors; Flower was granted two days to make good this deficiency before he assumed responsibility and must have spent the time in intensive study.

William Henry Flower was the grandson of Richard Flower, brewer, banker and sheep-breeder, of Marden Hall, Hertfordshire, who, in 1817, being dissatisfied with conditions in this country, sold his estate and emigrated to America. Three ships were required to accommodate the family and their possessions which included six couples of foxhounds and two Scotch deerhounds; and all were settled on a large holding in Illinois. Richard Flower's youngest son, Edward Fordham, returned to England when he was 19, married Selina, daughter of John Greaves of Radford Semele in Warwickshire, three years later in 1827, and settled at Stratford-on-Avon, where he founded the famous brewery. Their third son, William Henry, was born on 30th November 1831. His education was constantly interrupted by ill-health, but at the age of 13 for just over a year he was able to attend boarding school at Worksop, where, because of his interest and ability, he was made " Curator of the Museum ". In his letters home he frequently mentions this hobby: " 25th February 1844. I have done a skeleton of a starling, a knot which is a kind of sandpiper, and a water-rail." In the following year he mentions that the headmaster had set aside a room where dissections for the museum could be made: " I wish you could see us there," he writes, " with knives and scissors, cutting and injecting away. Since I have been here, I have dissected or helped in dissecting two good-sized dogs, one puppy, one cat, five rats, two rooks, one jackdaw."

In 1847 he entered University College, London, and lodged in Cloudesley Terrace. After taking an Arts course for two years he proceeded to the study of Zoology, Human and Comparative Anatomy and Physiology and was awarded a gold and a silver medal in recognition of his excellent results. He was elected a Fellow of the Zoological Society in 1852 and in the following year gave his first paper at one of the scientific meetings. In March 1854 he gained his membership of the Royal College of Surgeons and had by this date served for a year as House Surgeon at the Middlesex Hospital, where, in addition to his other duties, he had undertaken the care of the Museum.

It was just at this time that William Sharpey, Professor of Anatomy at University College, was asked by the Director General of the Medical Department of the Army to submit the names of " likely young men for service should war with Russia break out ". Flower soon learned that his name had been included for he was ordered to report for duty at Fort Pitt, Chatham, on 10th April 1854, where, he writes, " We live at our own expense, receive no pay and wear plain clothes ". After serving for some months at the Army Hospital at Templemore, where for a time he was the only surgeon, on 23rd July he sailed in the " Avon " from Queenstown as Assistant Surgeon to the 63rd Regiment, with over 1,000 troops bound for the East, arriving off Constantinople on 7th August. On the following day the combined fleets of England, France and Turkey with their transports, nearly 700 vessels in all, sailed out from Varna Bay, making a fine spectacle of which Flower writes: " A more magnificent, spirit-stirring sight can scarcely be imagined than this, perhaps the most powerful Armada that ever was collected together putting to sea. The beautiful order in which the mighty steamers, each followed by two large ships in tow, wheeled round out of the bay, and fell into their respective positions, while the line-of-battle ships hovered round, whipping up the slow ones into their places, and constantly firing guns as signals; all contributed to make it an event never to be forgotten by those who had the privilege of witnessing or sharing in it." On 14th September the forces landed, quite unopposed, about 28 miles north of Sebastopol. Flower states that all were ordered to land in " full dress ", which included cocked hat, scarlet coatee, gold epaulettes, sword, pistol, flask and greatcoat; but no baggage was permitted save what each could carry himself. There were no tents and the first night was spent uncomfortably on the beach in heavy rain. The army moved slowly forward to Sebastopol, but after two weeks Flower was sent back to a hospital ship, suffering from inflammation of the eyes brought about by exposure to the sun by day and cold by night. His right eye never fully recovered. On his return to duty on 13th October he found the siege of the town in progress. On 27th October, in a letter to his brother, he writes: " There are a good many amateurs here, come out to see what is going on; they live comfortably on board ship and annoy us by turning out clean with immaculate shirt collars and shining boots. . . . There is also a lady, wife of a cavalry officer who rides about and seems to enjoy the sight of powder and death amazingly." He became impatient with all the unnecessary hardships and blunders and questioned the justification for the war. In a letter to his mother in November he says:

" Though the Tzar may be a great despot, yet I think throughout this semi-barbarous country, Russian influence is for good, and unless we supply a better (which the Turkish influence certainly is not) it is a pity to destroy it." He wrote regularly and cheerfully home, concealing the fact that he suffered constantly from fever and frostbite. In December he received orders to return to England " for the recovery of his health ". Only from sources other than himself can be gained the story of his fine work and courage during the campaign. At Inkerman he and some of his colleagues " made themselves remarked for their coolness and devotedness to their professional duties; nothing deterred by hot fire, they pressed on, regardless of danger, to give their services to the wounded."

Flower arrived in England on 5th February 1855. When he was quite well again he resumed his surgical studies and gained his F.R.C.S. in 1857. Two years later he was appointed assistant surgeon to the Middlesex Hospital, Lecturer in Anatomy and Curator of the Museum. He was soon recognized as an able operator, particularly on the eye, and there is no doubt that had he so desired he would have acquired fame and fortune in Surgery.

On 15th April at Stone, near Aylesbury, William Henry Flower married Georgiana Rosetta, youngest daughter of Rear-Admiral Smyth and his wife Annerella, daughter of a former British Consul in Naples. This was a ceremony to which the bridegroom referred in later years as " the most important and happiest event of my life ". After a brief holiday on the continent, they returned to London to live at 15 Queen Anne Street, Cavendish Square, where on 22nd May 1860 their first child, Arthur Smyth, was born and their second, Caroline Mary, on 12th September 1861.

Particularly during the six years immediately previous to his appointment as Conservator, Flower lost no opportunity of making investigation on all material available to him, both normal and abnormal, human and animal, communicating his findings and conclusions when appropriate before learned societies or in the scientific journals. In 1861, his first book was published, *Diagrams of the Nerves of the Human Body*, which was favourably received both in this country and upon the continent. At the time, therefore, when he sent in his application for the post of Conservator of the Hunterian Museum, although he was the youngest of the candidates, he was already well known as a surgeon, comparative anatomist and zoologist. His father, on congratulating him upon the appointment, commented: " It places you in a high and honourable position at once, suited to your peculiar tastes and talents, which is rarely attainable at any time of life."

The new Conservator lost no time in beginning to satisfy the demands of his office. The synopsis of the contents of the museum first prepared in 1818 by Everard Home, revised and augmented in 1845 and 1851 by

Richard Owen, had proved a valuable guide for visitors to the collection. Since the last edition was out of date and out of print, on 27th January Flower was requested by the Museum Committee to prepare a new one, it being assumed, no doubt, that he had by now become fully acquainted with the contents of the museum. His energies seem to have been boundless for this little booklet was completed and approved by the committee on 17th March, when 500 copies were ordered which were to be sold for 6d. each. He now initiated certain improvements. Blinds were fitted to those windows facing east and south; all sections of the wall cases in the East Museum were made to open instead of alternate ones only as previously, an alteration which greatly facilitated the cleaning and arranging of specimens. Finding that much material remained undissected and unmounted he recommended the appointment of an additional assistant to select and prepare what was suitable for exhibition. During the summer months of 1862 all the cases and shelves were cleaned and the contents re-organized. Better lighting was installed, particularly in the work rooms. All specimens in drawers were checked, classified, named and catalogued. The storerooms were thoroughly overhauled and their contents accounted for. His investigations even went so far as the collections of calculi, diagrams, drawings and the histological specimens from which all spoiled slides were removed. In addition to his other duties, 6,285 visitors were received during this first year. Finding so much to be done, Flower applied for and was granted another assistant. There were twelve applicants, from whom James Pettigrew, M.D., of Edinburgh, was selected; Charles Stewart, Flower's successor, was accounted second in the list.

In his first report to the Museum Committee, dated 7th January 1863, he states rather modestly: " It will be readily understood by the Committee that a considerable portion of the first year of the charge of this extensive establishment has necessarily been spent by the Conservator in acquiring a knowledge of the varied duties of his office and of the nature, extent, actual condition and future requirements of the collection under his charge. It can scarcely be expected therefore that the present report will contain such evidence of actual progress towards perfecting the condition of the several departments of the museum as may be justly looked for in future years."

In the following years the pressure of work remained unabated. So that the collection should retain the comprehensive nature established by its founder, the Conservator made every effort to obtain examples of all hitherto unknown living things or species now extinct. In 1866 he was able to make the following report: " An interesting discovery was made in the latter part of last year, in the Island of Mauritius, relating to that remarkable bird the Dodo (*Didus ineptus*), once an inhabitant of that island, but extinct for nearly two centuries. The head and foot were the only parts previously known; and these presented such anomalous characters that much speculation existed among naturalists as to the structure of other portions of the skeleton. For many years numerous searches have been carried on in various parts of the island to endeavour to find further remains of this once frequent inhabitant, but hitherto in vain. The curiosity felt upon the subject was at last gratified by the discovery, while draining a marsh, of many bones of numerous individuals, undoubtedly of this species. As a portion of these were sent to this country and offered for sale, we have been enabled to secure, at a moderate

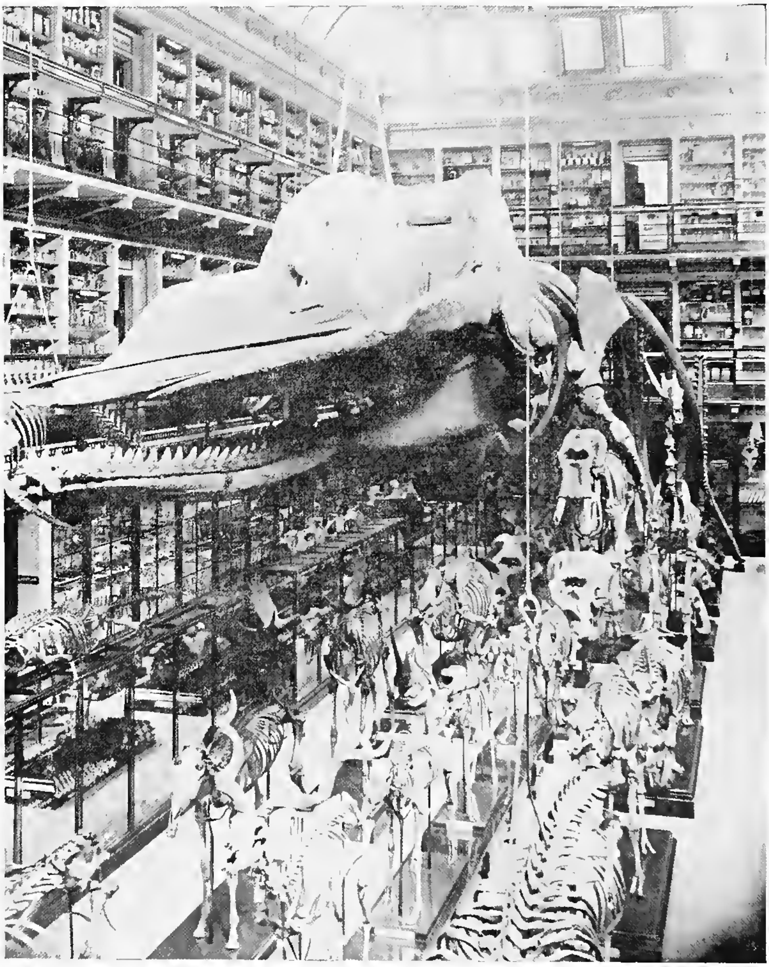

Fig. 8. Part of the Flower Collection of Comparative Osteology.

cost, some of the most characteristic bones." The bones had been purchased at Stevens's Auction Rooms in March and the " moderate cost " was £10.

As time went on, and from very modest beginnings, he built up a magnificent collection of comparative osteology which remained unsurpassed in this or any other country throughout his lifetime. He introduced innovations in the methods of display. Previously many of the skeletons had been mounted on stands so high that it was difficult for the student to make proper investigation of the details. Now all were placed, so far as possible, low or high enough for all parts to be viewed without difficulty. With the assistance of one of the finest articulators in the country, James Flower (no relation to the Conservator), all skeletons were prepared so that each bone could be removed for comparison with others. To make this even easier series of individual bones were mounted separately, a method of display re-introduced by Professor Wood Jones in 1947. Some of the first prepared in each case were bones of the fore limb from all available mammals.

This particular branch of Flower's activities was at times exceptionally laborious. Many of the skeletons were cleaned and re-articulated for the first time in many years. One of them, Flower reports, " that of the Walrus presented by the present President of the Royal Society, General Sabine, had been at some former period covered so thickly with paint that the surface of the bones was completely concealed. It has recently been taken to pieces, thoroughly cleaned, and re-articulated in an improved attitude. This operation was found to involve quite as much time and trouble as the preparation of a new skeleton; but as it was very nearly perfect, and the difficulties and expense of obtaining another example of this now rare animal might be considerable, it was thought worth while to undertake its restoration to a condition more creditable to the Museum than its former state." His improvements were extended to all parts of the museum. To make the " wet " preparations, particularly of human anatomy, of more value to students, he experimented with methods of labelling the structures *in situ* on the dissection, a procedure which called for much experiment with printing type and ink.

To use his own words, a museum is like a living organism; it requires constant and tender care or it perishes. As had been the case with his predecessors, the vast amount of work involved in the performance of his duties led to a breakdown in health and in 1873 he was granted leave of absence for six months. On his return, and when he felt that his collection of comparative osteology was complete, all the catalogues were revised. He made himself responsible in particular for the volumes relating to the Osteology and Dentition of Man (Part I, 1879) and Mammalia other than Man (Part II, 1884). These two volumes were re-issued in 1907, edited by

Charles Stewart. This work on the osteology of the Mammalia represents an outstanding piece of investigation demanding vision and patience allied to that of the founder himself; and like those prepared by Richard Owen for the Physiological Series, these catalogues remain classic works of reference.

In 1870, Flower succeeded Thomas Henry Huxley as Hunterian Professor of Comparative Anatomy and Physiology. During the next 14 years in this capacity he gave a valuable series of lectures covering the anatomy of the vertebrate animals both living and extinct. One of those who attended has stated that he " would not easily forget the clear and interesting manner in which they were delivered and the excellent drawings with which they were illustrated ". Some of the subject matter of the first course had already been published in 1870 with the title " Osteology of the Mammalia "; and much of the rest appeared in the form of articles and monographs in journals, these numbering some 120 during his 23 years' service at the Royal College of Surgeons. Among the many honours that he received, one in particular is indicative of the high esteem with which he was held by his colleagues. In 1879 he was elected by a unanimous vote President of the Zoological Society of London and was re-elected annually for the next 22 years.

Arduous and exhausting as his work was, Flower nevertheless found abundant leisure to spend with his family. There were seven children who enjoyed the rare privilege of having three vast unique playrooms, filled with pleasures more alluring than could be found in any toyshop. One of these happy children wrote in later life: " The most exciting were the tall skeleton of the Irish Giant, and that of the little Sicilian dwarf, with her tiny shoe and thimble, which had long been among the treasures of the collection. Another great object of our admiration was the remains of the Siberian Mammoth, with its real skin and hair, and the monkeys. These on certain wet half-holidays we were allowed to have out to play with instead of a doll, whilst we paid and received visits from and in our respective ' houses ' under the big whale or the giant sloth."

Towards the end of his term of office of Conservator, the recurrent problem of lack of space once more presented itself. As well as the contribution made by the Conservator, there were several notable donations during this period, such as that of Dr. Barnard Davis in 1880. The difficulty now was not so much that of numbers but of size; the osteological collection was completed from the most minute to the most massive and effective display was impossible in the existing museums. Before any definite plan had been made, however, Sir Richard Owen, then in his 80th year, announced his intention of resigning from the post of Superintendent of the Natural History Museum. There was little doubt in anyone's mind that Flower would be invited to succeed him. Reluctant though he was to leave Lincoln's Inn Fields, where he had spent so many happy years, he accepted the offer. The salary was raised from £800 to £1,400; and the title changed from Superintendent to Director. On 13th March 1884, at a meeting of the Council, a resolution was passed expressing deep regret at his resignation and thanking him for the admirable care, judgment and zeal which he had shown during the past 22 years in carrying out the various and responsible duties of Conservator. The regret was genuine but it was realised that, as had been the case 28 years previously when Richard Owen was placed in a similar position, the post of Director of the Natural History Museum provided the scope that Flower's outstanding abilities deserved and demanded. The energy and enthusiasm with which he had completely reorganized the Hunterian museum were directed to the collection now under his care. As a result of the strenuous nature of his work and the great responsibilities he had to bear, his health began to fail towards the end of 1897 and on 11th June 1898 he felt obliged to send in his resignation from the Directorship of the Museum. He died just over a year later, on 1st July 1899.

William Henry Flower was in many ways the greatest Conservator the Hunterian Museum had yet had. Where his predecessors had been primarily concerned, and rightly so, with establishing the reputation of the museum, he aimed to make it a scientific centre, a place of instruction as well as of interest for those who visited it. Furthermore, he possessed those rare qualities essential to the successful and harmonious direction of any great undertaking, for it was said of him that he combined the temper of a saint, the manners of an ambassador, the inspiration of a genius and the patience of a philosopher.

V. CHARLES STEWART

CHARLES, SON OF Thomas Anthony Stewart, M.D. of Leyden and surgeon to the Plymouth Public Dispensary, and his wife, formerly Miss Harriet Howard, was born on 18th May 1840 at a house in Princess Square, Plymouth. His older brother, Thomas Howard, born in 1832, entered King's College to study medicine and gained his M.R.C.S. in 1855. In July of that year he was successful in gaining a studentship in Anatomy at the Royal College of Surgeons, the last to be elected before they were discontinued, and during the following year made a special study of Echinodermata. When Richard Owen resigned and John Thomas Quekett was appointed Conservator, Stewart was promoted to the post of Senior Assistant in the Museum, and when applications were invited to fill the vacancy caused by Quekett's death in 1861 he submitted one but later withdrew it because of the precarious state of his health. He died on 21st December 1861. His brother Charles was at that time a student at St. Bartholomew's Hospital, but he had already spent much time in the study of comparative anatomy and incidentally in acquiring a knowledge of museum technique and administration from his frequent visits to the College. He gained his M.R.C.S. in 1862 and spent the next four years in practice in Plymouth; but on being invited to take the post of Curator of the Museum of St. Thomas's Hospital he accepted without hesitation. When the new hospital was built on the Albert Embankment in 1871 he was appointed Lecturer in Comparative Anatomy and, 10 years later, Lecturer in Physiology as well. In addition, for two years

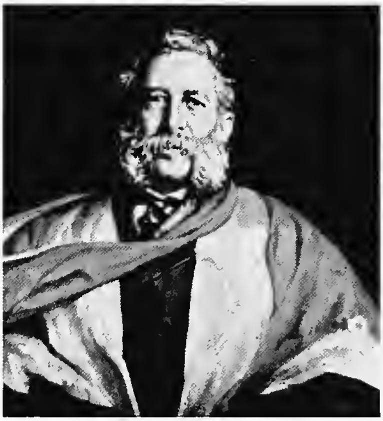

Fig. 9. Charles Stewart.

he was Professor of Biology and Physiology at the Bedford College for Women, an office he was obliged to resign on being selected as the new Conservator.

At a meeting of the Museum Committee held on 18th March 1884, the resignation of Mr. W. H. Flower was announced. He had prepared a " Memorandum on the Present Condition and Future Requirements of the Museum of the Royal College of Surgeons of England ", which was received on that day, approved and later printed. In that part of the report relating to the Physiological Collection, Flower makes the following observations: " This collection is the most eminently characteristic of the founder of the Museum, as its design and arrangement was specially the creation of his mind, and as, notwithstanding the very numerous additions, it still contains a larger proportion (rather more than one half) of Hunterian specimens than any other department. The collection is therefore so far in good preservation; but in order to increase its utility it is quite necessary that an entirely new edition of the Catalogue should be prepared containing descriptions, upon the model of those of the former edition, of the great numbers of additional specimens now only briefly entered in volumes not readily accessible to visitors to the Museum. The opportunity should also be taken of making improvements in the details of arrangement, without, however, departing from the general principle of the Hunterian classification. This is a work which I had in contemplation after the completion of the Catalogue of the Osteological Series." Further business of the committee was to review the rules and regulations relating to the office of Conservator, a practice customary previous to a new appointment. In this case the salary offered was £600 together with residence; otherwise little change was required.

The vacancy was advertised in the medical journals, in the *Anthenaeum*, *The Times* and *Nature* and candidates were invited to submit their applications on or before Saturday, 3rd May. Twelve were received, one of which was withdrawn later. Of the rest, three were or had been members of the museum staff: Alban Henry Griffith Doran (1849–1927), surgeon to the Samaritan Free Hospital for 30 years, who continued his interest in the museum to the end of his life; Benjamin Thompson Lowne (1839–1925), comparative anatomist, who edited the catalogue of the Teratological Series; and John George Garson, who helped to prepare the catalogue of the Osteological Series, acted as Conservator in the interval between Flower's departure and the appointment of his successor, and later became well known as an anthropologist. Among other applicants who achieved distinction elsewhere were Phineas Simon Abraham (1847–1921), dermatologist, who specialized in the study and treatment of leprosy; Alexander Fraser (1853–1909), who succeeded Cunningham as Professor of Anatomy in the Royal College of Surgeons of Ireland; and Frederick St. George

Mivart (1855–1925), son of the distinguished zoologist, then Lecturer in Comparative Anatomy at St. Mary's Hospital and later Medical Officer to the Ministry of Health.

Abraham and Stewart were the candidates most favoured by the Museum Committee, but they failed to agree about a final selection and this was made by the Council on 19th June, when the post was offered to Charles Stewart.

In 1884, generous bequests from Sir Erasmus Wilson made possible considerable extensions to the College buildings. The Conservator's house, No. 39 Lincoln's Inn Fields, was demolished to provide additional office accommodation and also an extension to the Library; No. 38 was acquired at the same time to provide premises for the new Conservator. While the alterations were being made, Stewart was granted £25 per quarter to pay for apartments elsewhere.

On 31st May 1888 he was asked by the Committee to prepare a report on the " present state of the catalogues " In it he recommended that " to expediate the completion of the catalogues in the various series . . . persons specially qualified for the duty should be employed " In consequence, Bowdler Sharpe, of the Natural History Department of the British Museum, was asked to undertake the revision of the catalogue relating to the osteology of Birds. This was completed and published in 1891 and he received an honorarium of £80. In 1890, Mr. G. A. Boulanger, also of the British Museum, was engaged to catalogue the skeletons of Amphibia and Reptiles and he received £25 for the work he did upon it. The catalogue was never reprinted so that in this, as in the catalogue relating to the osteology of Fish which was never revised, material additional to that contained in Owen's catalogue of 1853 remained in manuscript. Stewart himself undertook the revision of the catalogues of the Physiological Series and also of Human Osteology.

Like all his predecessors, Stewart was faced with acute shortage of space, but this was remedied at the same time that alterations were made in the rest of the College premises. In 1860 the house, No. 43 Lincoln's Inn Fields, the home of John Zoffany from 1765 to 1769, had been purchased and this was now demolished to provide extensions to the museum. The architect was Stephen Salter, who was desired to make the new rooms similar in design to those built according to the plans prepared by Sir Charles Barry 50 years previously. The building programme was completed in 1891 and when the rearrangement of specimens was finished six years later the museums, now five in all, were numbered for identification. Stewart now prepared a new synopsis consisting of plans showing the disposition of preparations in the various rooms.

Among the interesting acquisitions to the collection at this time were the wax models prepared by Joseph Towne, presented by Guy's Hospital, many of which are still in the Museum; the brain of Charles Babbage, the distinguished mathematician, a report on which was made by Sir Victor Horsley; 170 skeletons of birds, the gift of Dr. R. W. Shufeldt; a large collection of skulls of different races, from Sir Richard Havelock Charles; three Dervish skulls from the battlefield of Omdurman, presented by Dr. Henry S. Wellcome; and the mummy of Ra-nefer of the IVth dynasty, the only one known of this period, presented by Sir Flinders Petrie, which, together with the osteological gifts mentioned, was lost when the College was bombed in May 1941.

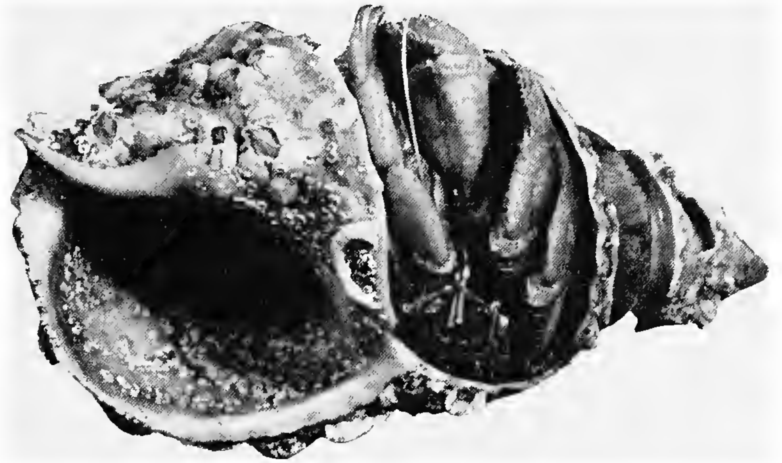

Fig. 10. A Hermit Crab (*Eupagurus bernhardus*) within a whelk shell. A specimen prepared by Charles Stewart to illustrate variety in integument.

In 1886, Stewart was appointed Hunterian Professor of Comparative Anatomy and Physiology and until 1902 gave a fine series of six or more lectures each year. This was at the same time that he was revising the physiological catalogue and the subjects of his lectures coincided with the investigations undertaken for this purpose. These tasks of rearranging the museum, supervising the preparation of the new osteological catalogues and the complete revision of those for the physiological series were arduous and demanding. Stewart had, under the direction of the Museum Committee and guided by the Memorandum prepared by Professor Flower, adopted a scheme of arrangement of the physiological series somewhat different from that originally used. Now it was decided that the part of this section denoting the structure and function of the individual should be subdivided and each smaller group be devoted to the demonstration of the intimate structure of the several parts of the body systematically.

Instead of the numbers running consecutively throughout the series as heretofore, each sub-section was treated as an entity, bearing a letter (A—Skeleton; B—Ligaments, etc.) and its own series of numbers.

In 1892, in order to expedite the accomplishment of these various tasks the post of anatomical assistant, left vacant by the resignation of Dr. Garson four years previously, was now filled by the appointment of Mr. R. H. Burne, already eminent as a zoologist, a fine artist and dissector. On 1st April, a few weeks after he had commenced his duties, Stewart was able to report to the Museum Committee that he had already made some valuable additions to the collection and added: "I find him most industrious and painstaking ". In 1894, Stewart was asked by the Museum Committee to proceed with the catalogue of that part of the Physiological Series which had already been replanned. A year later Stewart reports: " In carrying out this work I have been most ably assisted by Mr. Burne; he is most industrious and his dissections are beyond praise. Mr. Burne has been with us now for three years and nothing I could say would be too strong to express how much the College may be congratulated on having his services." The committee expressed their satisfaction by increasing Mr. Burne's salary from £150 to £200. Mr. Burne retained his interest in the museum to the time of his death in 1953. Promoted Assistant Conservator in 1908, Physiological Curator in 1912 and elected Hunterian Trustee after his retirement, his association with the College extended over a period of 61 years. During the time when, as anatomical assistant, he was engaged particularly in the preparation of dissections to supplement or replace those illustrating normal structures, he produced a fine series of specimens to demonstrate the nervous system of the Invertebrata which provides one of the main attractions in the museum to-day.

Finding that progress in preparing the catalogues was retarded owing to the many calls upon his time, Stewart recommended in 1898 that Dr. Elliot Smith (1871–1937), who was then working in Cambridge engaged in research on the central nervous system, should be invited to help in the preparation of descriptions of such specimens in the museum, an honoraarium of £100 being agreed upon in payment for the work. In October 1900 he commenced his duties as Professor of Anatomy in the Government School of Medicine in Cairo and the work on the catalogue was continued by W. L. H. Duckworth (1870–1956), later Reader in Human Anatomy and Master of Jesus College, Cambridge.

The first volume of the new catalogue of the Physiological series was printed and published in 1900. This comprised descriptions of the 640 specimens contained in the first three sections, Endoskeleton (A), Flexible Bonds of Union and Support (B) and Muscular and Allied Systems (C). The second volume appeared two years later, containing details of 805 of the 872 specimens illustrating the Nervous System. The remainder, together with 1,319 relating to the Special Senses, made up the third volume, published in 1907.

Long before this date, however, Stewart had been suffering from a heart disease which obliged him in 1902 to discontinue his museum lectures. In June 1907 he was too ill to attend to his duties and was granted leave of absence until September. In that month, however, he was admitted to the Medical and Surgical Home in Endsleigh Gardens and died there on the 27th. The funeral took place at Highgate Cemetery on 2nd October.

Charles Stewart was considered to be one of the best speakers in London. He spoke without notes and his lectures were characterized by lucidity of expression and easy style. He had a profound and extensive knowledge of comparative anatomy, particularly of the invertebrates, and the attraction of his lectures was enhanced by his skill in blackboard illustration. His patience and deftness in dissection resulted in the addition of many fine specimens to the collection, and the illustrations which he prepared for the first volume of the catalogue are of high artistic merit. His chief claim to distinction as a zoologist rests upon his work on the Echinodermata, his early interest in which had been aroused by his brother long before he commenced his duties at the College. Among other investigations, he discovered in the genus *Cidaris*, which appear to lack external gills, certain organs—" Stewart's Organs "—believed to be of a respiratory nature. His researches extended to all those subjects a knowledge of which would aid and benefit his labours for the improvement of the museum; but apart from the catalogues he wrote very little. " I dislike publication," he said, " it frequently savours of self-advertisement. I think it better to exhibit the works of nature as best I can in order that everyone may study them and draw their own deductions."

Like his predecessors, Stewart's worth was recognized both in this country and abroad. He was elected a Fellow of the Royal Society in 1896; President of the Linnaean Society from 1890 to 1894; Fullerian Professor at the Royal Institution from 1894 to 1897; and LL.D. of Aberdeen.

The life of a museum rests in the hands of its Conservator. Stewart died before he could complete the great task that he had undertaken and often his contribution to the history of this great collection has been overlooked; but with his vast biological and anatomical knowledge, his artistic skill, and his enthusiasm, no Conservator did more than he to carry on the great tradition of the Hunterian collection.

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